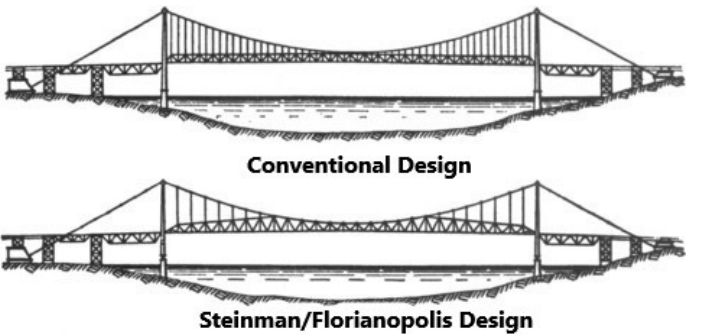


# One of A Kind

The Walter Taylor Bridge which crosses the Brisbane River between Indooroopilly and Chelmer, is a unique variation of the rare Florianopolis / Steinman suspension bridge. With a length between pylons of 600 feet (183 metres), the Walter Taylor bridge was the longest suspension bridge in Australia when completed in 1936 and remains a celebrated Brisbane heritage icon.

The bridge was originally called the Indooroopilly Toll Bridge, however was renamed in 1956 in honour of its notable constructor and founder, Walter Taylor, who built many projects throughout Brisbane in the 1920's to 1940's.



Since 1926, all other bridges built using the Florianopolis/Steinman design have now been demolished, except for the original In Brazil, although even it has been modified and is not functioning as originally intended. This makes the Walter Taylor Bridge the only example of this type world-wide still in operation as originally designed.

## Acknowledgements

Brisbane City Council Archives  
State Library of Queensland  
Structurae  
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# Who was Walter Taylor?

Walter Taylor was born in Sheffield England in 1872 and emigrated to Australia in 1882. His father was a builder and Walter joined him to learn the construction industry on the job.

To further his knowledge and expertise, he moved his family to England and Europe. There he spent 10 years to study and gain more experience in the construction industry, particularly in the developing field of reinforced concrete.

From 1912 back in Australia, he spent the rest of his life developing a successful construction business in Brisbane and surrounding regions. Specialising in reinforced concrete structures, Walter Taylor developed many projects including bridges, warehouses, apartment blocks, factories, schools, hospitals, and churches. In particular, his Graceville Uniting Church in Oxley Rd Graceville is a fine example of "perpendicular gothic" using his precast concrete methods to bring cathedrals to the suburbs. This church is listed on both the Queensland Heritage Register and the Australian Heritage Commission.

His first concrete bridge was the Abbotsford Road bridge over Breakfast Creek, Albion, which at that time was the longest of its type attempted in Brisbane. Although not a trained professional engineer, Walter Taylor was an astute builder and businessman, ensuring that he assembled suitably trained engineers for the detailed design work needed. He was later awarded the Queensland University of Technology's Distinguished Constructor Award and inducted into their Construction Hall of Fame.

In 1955, Walter Taylor died at the age of 93, and while his legacy is seen around Brisbane, his suspension bridge at Indooroopilly is by far his greatest achievement.



# Operation & Legacy since 1936

After being opened by the Governor of Queensland Sir Leslie Wilson on 14 February 1936, the new crossing provided tremendous motivation for residential development on the southern side of the river, due to improved cross river access for western suburbs. The bridge's franchise allowed the private operator to charge tolls, initially 6 pence per car and light truck but only including the driver, while passengers were charged another penny each. These were paid at the toll gate on the Indooroopilly side under the pylon and the total profit in its first year of service was £2581.

The Indooroopilly pylon was occupied by the Toll Master, with the southern tower occupied by toll collectors and bridge maintenance. The original Toll Master was Morton John Green, and was later succeeded by his son Ron Green who remarkably had seven children growing up in their bridge home. Three generations of Green family lived in the Indooroopilly pylon for over 70 years, until 2010, when the last family members moved out.

The Chelmer pylon had a large room nicknamed 'The Ballroom', and other rooms used as a kiosk and boathouse beneath road level to cater for swimmers at the Chelmer Sands beach, once located below the bridge.

When the franchise expired in 1965, the tolls were removed, and the bridge ownership was transferred to the Brisbane City Council. The Indooroopilly pylon was then rented to the Green family, with the Chelmer pylon rented to university students through the 1970s and 1980s. Domestic accommodation in the pylons continued to be leased until 2010, after which the rooms were converted to meeting rooms.

Since 1968, Brisbane City Council has carried out extensive refurbishments to the suspension cable wires and connection plates, installing additional corrosion protection, replacing wooden decking with pre-cast concrete panels, replacing all bolts and joint plates, and added reinforcements to extend the life of the bridge.

In October 1992, the Walter Taylor Bridge was listed in the Queensland State Heritage Register.

It has continued to serve residents and commuters since 1936 as a most elegant crossing of the Brisbane River, and will proudly continue to do so well into the future.



Dedicated to a better Brisbane

# Walter Taylor Bridge

## Engineering a unique Queensland landmark

Engineering Heritage Queensland and Brisbane City Council celebrate the Walter Taylor Suspension Bridge as a unique Queensland landmark for engineering excellence.



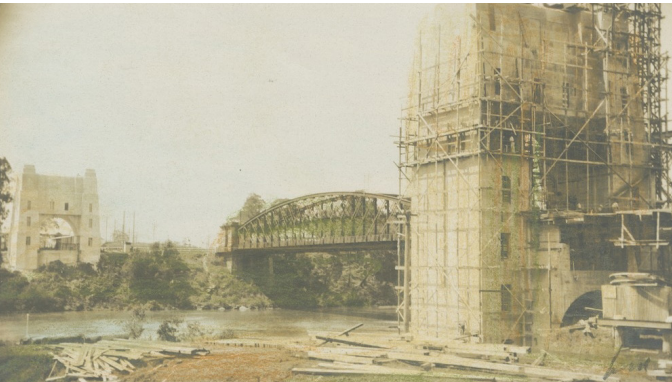
Engineering Heritage Queensland (EHQ)  
Stuart Rothwell MIEAust - EHQ  
'The Walter Taylor Bridge- Florianopolis Australis', paper presented to New York City Bridge Engineering Conference, 2019, EHQ  
Brian Becconsall FIEAust - EHQ

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# Construction

Work on site commenced in early 1932, with pylons completed by March 1935. All suspension cables were in place across the river by June 1935. Extensive use of local labour was made with work carried out without the use of river plant. There were no reported fatalities during construction and the bridge was completed and first tested on 4 January 1936, just 10 days before the official opening.

- Construction Facts
- Chelmer pylon foundations consist of 168 ironbark piles, with an average depth 48 feet (14.6 m) made with 5462 tons of concrete.
  - Indooroopilly pylon foundations were in rock excavations, needing 1772 tons of concrete.
  - The elegant art deco style pylon structures rises 136 feet (41.5 metres) above pile heads, contain 4,487 tons of concrete, 62 tons of reinforcing steel and 9 rooms suitable for habitation, a unique feature and the only one of its kind in the southern hemisphere.
  - Major fabrication was carried out on site, with1000 tons of steel sections from BHP and 80,000 rivets used.
  - 1675 tons of cement was supplied locally by Queensland Cement & Lime Co.
  - Total construction cost total was £85,000 excluding resumptions and approach road works.



# Bridge Design

The design adopted applied a technique invented by the celebrated American civil engineer D.B. Steinman who built the first bridge of this type in 1926 in the town of Florianopolis, in southern Brazil, so this style is now referred to as a Florianopolis bridge.

This new design differentiated from conventional suspension design by raising the top member of the bottom stiffening truss to join the catenary at the quarter points of the span. This had the effect of cancelling out some of the opposing forces, enabling cost savings in material. To build on this Steinman design, Walter Taylor replaced the usual steel eye bars linked as chains he initially envisioned for the suspension with the surplus steel cables from the Sydney Harbour bridge.

To achieve this, Taylor had to develop special bolted steel plate joints to connect the suspension cables to the steel trusses, and these were successfully tested by Professor R Hawken at the University of Queensland Engineering Faculty of Engineering. The combination of these two innovations have resulted in a unique variation of design, truly ONE OF A KIND.

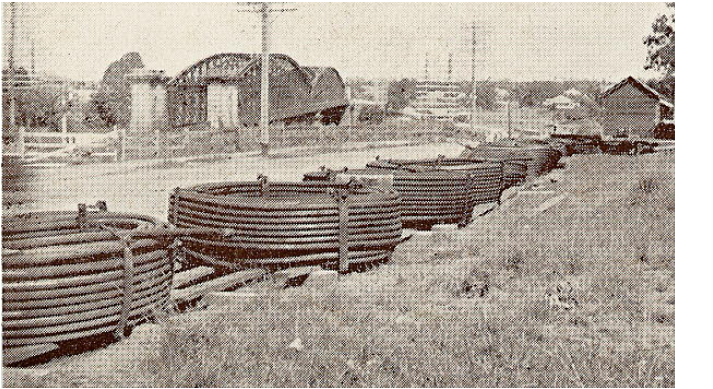
Although their involvement was never fully recognized at the time, it is now widely acknowledged that the detailed bridge design was completed by Walter J. Doak, Chief Engineer, Queensland Rail. The pylons of reinforced concrete and foundations designs were by Queensland engineering consultant, Russell J. McWilliam. Throughout all the design processes, Walter Taylor engaged with several consulting engineers to resolve all technical aspects to the satisfaction of the Brisbane City Engineer, E.F. Gilchrist, and the Main Roads Commissioner John R. Kemp in accordance with the terms of the franchise.

- The Road design provided a two-lane roadway of 26 feet (7.9 metres) and a pedestrian walkway of 5 feet 6 inches (1.6 metres).
- The decking was originally timber, consisting of 9-inch (225 millimetres) x 4-inch (100 millimetres) hardwood planks, covered with 2.5-inch (64 millimetres) asphalt. Later in 1993 all timber was replaced with precast concrete panels.
- A minimum height of 46 feet (14 metres) above high-water level was provided for shipping clearance.

# Cable Connection with Sydney Harbour Bridge

Early in 1931, Walter Taylor envisioned a suspension bridge at Indooroopilly could use the surplus steel cables made available from construction of the Sydney Harbour Bridge. Seeing a great opportunity to save costs, he secured a purchase agreement from Dorman Long and Co. in Sydney for the following:

- Two groups of 12 cables, with each cable 2.76 inches (70 millimetre) in diameter and 1060 ft long (323m).
- Each cable contained 217 cores of gauge number 8 wire (being 0.160 inch, or 4 millimetres in diameter) wound in eight layers.
- Total breaking strain per cable is 350 tons, and in the design for Indooroopilly, these operate at a maximum strain of only 84 tons each.



# Why was it Built?

During the 1880s, a lack of a nearby road bridge led to frustrated residents lobbying the Colonial government to link vehicle access from Indooroopilly to Chelmer. Their deputations were unsuccessful at this time, leaving the Victoria Bridge as the only road crossing available to cars travelling over the Brisbane River.

In 1924, a Sherwood Progress Association chaired by Walter Taylor, produced a proposal for a bridge to mark the centenary of Lieutenant John Oxley's first visit to Brisbane in 1824. This would allow the old 1892 vehicular ferry used at this point to finally be replaced.

Various progress associations and shire councils then came together, forming the Indooroopilly-Chelmer Centenary Memorial Bridge League. Representations for a new vehicle suspension bridge were then made to the Brisbane River Crossing Commission, in 1926.

Further traction from the 1930s great depression sparked the need for large public and private works to be implemented to provide economic stimulus. The then Moore Ministry of the Queensland Government passed measures to allow franchises to be granted to private enterprise, to build and operate public projects.

In 1931, with support from the newly established Brisbane City Council, an agreement was made with the Queensland Government for a 35-year franchise to Walter Taylor for a road suspension bridge. Walter Taylor then assigned his franchise to the 'Indooroopilly Toll Bridge Limited' private company, which raised £75,000 in capital, a formidable task during a great depression. Walter Taylor was both a director, project manager and constructor; however, all designs and plans were subject to approval by the Main Roads Commission.

